



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/596,950	06/29/2006	Ho-Yong Jeong	P1976US00	2844
58/027 7590 03/05/2009 H.C. PARK & ASSOCIATES, PLC 8500 LEESBURG PIKE SUITE 7500 VIENNA, VA 22182				
EXAMINER MCDOWELL, JR, MAURICE L				
ART UNIT 2628		PAPER NUMBER		
NOTIFICATION DATE 03/05/2009		DELIVERY MODE ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PATENT@PARK-LAW.COM

Office Action Summary

Application No.

10/596,950

Applicant(s)

JEONG ET AL.

Examiner

MAURICE MCDOWELL, JR

Art Unit

2628

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 6/29/2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SI/02)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 101

1. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

2. Claims 8-10 are rejected under 35 U.S.C. 101 as not falling within one of the four statutory categories of invention. While the claims recite a series of steps or acts to be performed, a statutory “process” under 35 U.S.C. 101 must (1) be tied to another statutory category (such as a particular apparatus), or (2) transform underlying subject matter (such as an article or material) to a different state or thing (Reference the May 15, 2008 memorandum issued by Deputy Commissioner for Patent Examining Policy, John J. Love, titled “Clarification of ‘Processes’ under 35 U.S.C. 101”). The instant claims neither transform underlying subject matter nor positively tie to another statutory category that accomplishes the claimed method steps, and therefore do not qualify as a statutory process. For example in claim 8, the step of extracting a maximum and minimum value of three color image signals is broad enough to read on a person mentally finding the largest and smallest value among the image signal values; the step of reading a white scaling signal from an external could read on a person receiving a value from an external set of values that are written on paper; the step of selecting a corresponding white scaling factor of the white scaling factors based on the read white scaling signal, could read on a person mentally deciding on a value based on another; the remaining steps of claim 8 could all be performed by a person either mentally or by using paper and pencil. Looking at the above

example, it has been shown that the steps of claim 8 are not inherently performed by an apparatus or machine, thus they are non-statutory under 101.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-3, 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Higgins et al. Pub. No.: US 2005/0083341 A1 in view of Morgan et al. Patent No.: US 6,453,067 B1.

5. Regarding claim 1, Higgins teaches: An apparatus of converting three color image signals into four color image signals having a white signal, the apparatus comprising: a storing unit storing a plurality of white scaling factors (fig. 3, 306 see also [0030]); converting the three color image signals into the four color image signals based on the selected white scaling factor (fig. 3, 302 see also [0030]) and outputting the converted four color image signals (fig. 3, 310).

6. Higgins doesn't teach: a signal converting unit selecting a corresponding white scaling factor of the white scaling factors stored in the storing unit based on a white scaling signal from an external.

7. The analogous prior art Morgan teaches: a signal converting unit selecting a corresponding white scaling factor of the white scaling factors stored in the storing unit based on a white scaling signal from an external (fig. 5, 102 and 104 see also col. 4 lines 21-25) (A scaling

factor is selected because the data is scaled to compensate for the external light source) for the benefit of to increase the image brightness of sequential color systems.

8. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine a signal converting unit selecting a corresponding white scaling factor of the white scaling factors stored in the storing unit based on a white scaling signal from an external as shown in Morgan with Higgins for the benefit of to increase the image brightness of sequential color systems.

9. Regarding claim 2, Higgins doesn't teach: The apparatus, further comprising: a digamma processing unit digamma processing the three color image signals and applying to the signal converting unit; and a gamma processing unit gamma processing the four color image signals from the signal converting unit.

10. The analogous prior art Morgan teaches: The apparatus, further comprising: a digamma processing unit digamma processing the three color image signals and applying to the signal converting unit (fig. 7, 702 see also col. 7 lines 4-6); and a gamma processing unit gamma processing the four color image signals from the signal converting unit (fig. 7, 702 see also col. 7 lines 4-6) for the benefit of providing three-color image data for a pixel, assigning a value dependent on a smallest of the primary color intensity input words to a combined color intensity word, and assigning a value to each of three primary color intensity output words, each said assigned value equal to the sum of the corresponding primary color intensity input word and a hue correction value.

11. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine a digamma processing unit digamma processing the three color image

signals and applying to the signal converting unit; and a gamma processing unit gamma processing the four color image signals from the signal converting unit as shown in Morgan with Higgins for the benefit of providing three-color image data for a pixel, assigning a value dependent on a smallest of the primary color intensity input words to a combined color intensity word, and assigning a value to each of three primary color intensity output words, each said assigned value equal to the sum of the corresponding primary color intensity input word and a hue correction value.

12. Regarding claim 3, Higgins doesn't teach: The apparatus, wherein the storing unit is a lookup table.

13. The analogous prior art Morgan teaches: The apparatus, wherein the storing unit is a lookup table (fig. 7, 702 see also col. 7 lines 4-6) for the benefit of to increase the image brightness of sequential color systems.

14. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the storing unit is a lookup table as shown in Morgan with Higgins for the benefit of to increase the image brightness of sequential color systems.

15. Regarding claim 11, Higgins teaches: A display device comprising: a plurality of pixels arranged in a matrix (fig. 3, 310); a gray voltage generating unit generating a plurality of gray voltages (fig. 3, 310) (The display generates gray voltages); an image converting unit converting three color image signals into four color image signals (fig. 3, 302 see also [0030]); and a data driving unit selecting gray voltages corresponding to the converted four color signals among the gray voltages from the gray voltage generating unit (fig. 3, 310) (The display has driving unit that selects the gray voltages), wherein the image converting unit further comprises a storing unit

storing the white scaling factors (fig. 3, 306 see also [0030]), and converts the three color image signals into the four color image signals based on the selected white scaling factor (fig. 3, 302 see also [0030]).

16. Higgins doesn't teach: wherein the image converting unit selects a corresponding white scaling factor of the white scaling factors based on a white scaling signal from an external.

17. The analogous prior art Morgan teaches: wherein the image converting unit selects a corresponding white scaling factor of the white scaling factors based on a white scaling signal from an external (fig. 5, 102 and 104 see also col. 4 lines 21-25) for the benefit of to increase the image brightness of sequential color systems.

18. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the image converting unit selects a corresponding white scaling factor of the white scaling factors based on a white scaling signal from an external as shown in Morgan with Higgins for the benefit of to increase the image brightness of sequential color systems.

19. Claims 4-7, 12-13 rejected under 35 U.S.C. 103(a) as being unpatentable over Higgins et al. Pub. No.: US 2005/0083341 A1 in view of Morgan et al. Patent No.: US 6,453,067 B1 further in view of Lee et al. Pub. No.: US 2003/0151694 A1.

20. Regarding claim 4, the previous combination of Higgins and Morgan remains as above but doesn't teach: The apparatus, wherein the signal converting unit extracts a maximum value and a minimum value of the three color image signals, determines that the three image color signals are included in a fixed scaling area or a variable scaling area based on the maximum value and the minimum value, calculates a increasing ratio based on a fixed scaling factor when the three color image signals are included in the fixed scaling area, calculates the increasing ratio

based on the maximum value, the minimum value, and the selected white scaling factor when the three color image signals are included in the variable scaling area, and converts the three color image signals into the four color image signals depending on the calculated increasing ratio and the three color image signals.

21. The analogous prior art Lee teaches: The apparatus, wherein the signal converting unit extracts a maximum value and a minimum value of the three color image signals [0062], determines that the three image color signals are included in a fixed scaling area or a variable scaling area based on the maximum value and the minimum value (fig. 2 see also [0055]), calculates a increasing ratio based on a fixed scaling factor when the three color image signals are included in the fixed scaling area [0062] [0063], calculates the increasing ratio based on the maximum value, the minimum value, and the selected white scaling factor when the three color image signals are included in the variable scaling area [0062] [0063], and converts the three color image signals into the four color image signals depending on the calculated increasing ratio and the three color image signals (fig. 4, 16 see also [0048]) for the benefit of changing the brightness of an image, which can increase the brightness of the image while maintaining the hue and saturation of the image.

22. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the signal converting unit extracts a maximum value and a minimum value of the three color image signals, determines that the three image color signals are included in a fixed scaling area or a variable scaling area based on the maximum value and the minimum value, calculates a increasing ratio based on a fixed scaling factor when the three color image signals are included in the fixed scaling area, calculates the increasing ratio based on the

maximum value, the minimum value, and the selected white scaling factor when the three color image signals are included in the variable scaling area, and converts the three color image signals into the four color image signals depending on the calculated increasing ratio and the three color image signals as shown in Lee with the previous combination for the benefit of changing the brightness of an image, which can increase the brightness of the image while maintaining the hue and saturation of the image.

23. Regarding claim 5, Higgins teaches: The apparatus, wherein the fixed scaling factor is to add "1" to the selected white scaling factor [0030].

24. Regarding claim 6, the previous combination of Higgins and Morgan remains as above but doesn't teach: The apparatus, wherein the white scaling factors have values between 0.8 and 0.9, and each of scaling factors has a value divided equally by eight between 0.8 and 0.9.

25. The analogous prior art Lee teaches: The apparatus, wherein the white scaling factors have values between 0.8 and 0.9, and each of scaling factors has a value divided equally by eight between 0.8 and 0.9 [0048] for the benefit of changing the brightness of an image, which can increase the brightness of the image while maintaining the hue and saturation of the image.

26. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the white scaling factors have values between 0.8 and 0.9, and each of scaling factors has a value divided equally by eight between 0.8 and 0.9 as shown in Lee with the previous combination for the benefit of changing the brightness of an image, which can increase the brightness of the image while maintaining the hue and saturation of the image.

27. Regarding claim 7, the previous combination of Higgins and Morgan remains as above but doesn't teach: The apparatus, wherein the white scaling factors are eight whites scaling factors.

28. The analogous prior art Lee teaches: The apparatus, wherein the white scaling factors are eight whites scaling factors [0048] for the benefit of changing the brightness of an image, which can increase the brightness of the image while maintaining the hue and saturation of the image.

29. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the white scaling factors are eight whites scaling factors as shown in Lee with the previous combination for the benefit of changing the brightness of an image, which can increase the brightness of the image while maintaining the hue and saturation of the image.

30. Regarding claim 12, the previous combination of Higgins and Morgan remains as above but doesn't teach: The device, wherein the signal converting unit extracts a maximum value and a minimum value of the three color image signals, determines that the three image color signals are included in a fixed scaling area or a variable scaling area based on the maximum value and the minimum value, calculates a increasing ratio based on a fixed scaling factor when the three color image signals are included in the fixed scaling area, calculates the increasing ratio based on the maximum value, the minimum value, and the selected white scaling factor when the three color image signals are included in the variable scaling area, and converts the three color image signals into the four color image signals depending on the calculated increasing ratio and the three color image signals.

31. The analogous prior art Lee teaches: The device, wherein the signal converting unit extracts a maximum value and a minimum value of the three color image signals, determines that

the three image color signals are included in a fixed scaling area or a variable scaling area based on the maximum value and the minimum value (fig. 2, see also [0055]), calculates a increasing ratio based on a fixed scaling factor when the three color image signals are included in the fixed scaling area, calculates the increasing ratio based on the maximum value, the minimum value, and the selected white scaling factor when the three color image signals are included in the variable scaling area, and converts the three color image signals into the four color image signals depending on the calculated increasing ratio and the three color image signals (fig. 6, 50 and 52 and 54 see also [0062] [0063]) for the benefit of changing the brightness of an image, which can increase the brightness of the image while maintaining the hue and saturation of the image.

32. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the signal converting unit extracts a maximum value and a minimum value of the three color image signals, determines that the three image color signals are included in a fixed scaling area or a variable scaling area based on the maximum value and the minimum value, calculates a increasing ratio based on a fixed scaling factor when the three color image signals are included in the fixed scaling area, calculates the increasing ratio based on the maximum value, the minimum value, and the selected white scaling factor when the three color image signals are included in the variable scaling area, and converts the three color image signals into the four color image signals depending on the calculated increasing ratio and the three color image signals as shown in Lee with the previous combination for the benefit of changing the brightness of an image, which can increase the brightness of the image while maintaining the hue and saturation of the image.

33. Regarding claim 13, Higgins teaches: The device, wherein the fixed scaling factor is to add "1" to the selected white scaling factor [0030].

34. Claims 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al. Pub. No.: US 2003/0151694 A1 in view of Morgan et al. Patent No.: US 6,453,067 B1.

35. Regarding claim 8, Lee teaches: A method of converting three color image signals into four color image signals having a white signal, the method comprising: extracting a maximum value and a minimum value of the three color image signals [0062]; determining that the three image color signals are included in a fixed scaling area or a variable scaling area based on the maximum value and the minimum value (fig. 2 see also [0055]) (The fixed and variable scaling spaces are equivalent to the fixed and variable scaling areas); calculating a increasing ratio depending on a fixed scaling factor based on the selected white scaling factor when the three color image signals are included in the fixed scaling area [0062] [0063]; calculating the increasing ratio based on the maximum value, the minimum value, and the selected white scaling factor when the three color image signals are included in the variable scaling area [0062] [0063]; and converting the three color image signals into the four color image signals depending on the calculated increasing ratio and the three color image signals (fig. 4, 16 see also [0048]).

36. Lee doesn't teach: reading a white scaling signal from an external; selecting a corresponding white scaling factor of the white scaling factors based on the read white scaling signal.

37. The analogous prior art Morgan teaches: reading a white scaling signal from an external (fig. 5, 102 and 104 see also col. 4 lines 21-25); selecting a corresponding white scaling factor of

the white scaling factors based on the read white scaling signal (fig. 5, 102 and 104 see also col. 4 lines 21-25) for the benefit of to increase the image brightness of sequential color systems.

38. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine reading a white scaling signal from an external; selecting a corresponding white scaling factor of the white scaling factors based on the read white scaling signal as shown in Morgan with Lee for the benefit of to increase the image brightness of sequential color systems.

39. Regarding claim 9, Lee doesn't teach: The method, further comprising: digamma processing the three color image signals; and gamma processing the converted four color image signals.

40. The analogous prior art Morgan teaches: The method, further comprising: digamma processing the three color image signals (fig. 7, 702 see also col. 7 lines 4-6); and gamma processing the converted four color image signals (fig. 7, 702 see also col. 7 lines 4-6) for the benefit of to increase the image brightness of sequential color systems.

41. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine digamma processing the three color image signals; and gamma processing the converted four color image signals as shown in Morgan with Lee for the benefit of to increase the image brightness of sequential color systems.

42. Regarding claim 10, Lee teaches: The method, wherein the conversion to four color image signals comprises: calculating first conversion image signals by multiplying the increasing ratio to the three color image signals [0063]; calculating a minimum value of the first conversion image signals [0055]; calculating a compensation value by dividing a value multiplied the

selected white scaling factor to the minimum value into the scaling factor [0056]; and calculating resultant three color image signals by subtracting the compensation from the first conversion image signals, and calculating the white signal by dividing the compensation into the selected white scaling factor [0106].

Response to Arguments

43. Applicant's arguments with respect to claims 1-13 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MAURICE MCDOWELL, JR whose telephone number is (571)270-3707. The examiner can normally be reached on Mon-Friday 7:30am - 5:00pm Eastern Time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Xiao Wu can be reached on 571--272-7761. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MM

/XIAO M. WU/
Supervisory Patent Examiner, Art Unit 2628